AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning on page 2, line 21 with the following amended paragraph:

In general, the RAM (Random Access Memory) representing the primary memory is made of semiconductor. Therefore, price per unit capacity of the memory is very expensive compared to the hard disk representing the secondary memory. Besides, as almost all kinds of primary memory are volatile, information is erased when the electric power is turned off. There are non-volatile RAM such as SRAM (Static RAM) and FRAM (Flash RAM), however, they are more expensive than volatile DRAM (Dynamic RAM). Some developers introduced MRAM (Magnetic RAM) to the market in order to get a new type of non-volatile RAM with low cost. Fig. 2 shows the general structure of the MRAM. The basic principle of the MRAM comes from the MR (Magnetic Resistance) head. A plurality of word line 61 running in one direction is arrayed with a gap. On the each word line 61, a plurality of magnetic bit cell 55 is arrayed. A plurality of bit line 63 running in the other direction crossing the word line 61 is arrayed on the magnetic bit cell 55. That is, the word line 61 and the bit line 63 cross each other in the three dimensional space, and the bit cell 55 is sandwiched at the crossing area of the word line 61 and the bit line 63. Here, the bit cell 55 comprises a first ferromagnetic layer 71 contacting the word line 61, a second ferromagnetic layer

73 contacting the bit line 63 and a tunneling barrier layer [[77]] 75 inserted between the first 71 and second ferromagnetic layer 73. The first ferromagnetic layer 71 is magnetized in parallel direction to running direction of the word line 61. If the magnetized states of the first 71 and the second ferromagnetic layer 73 are the same, the bit cell represents "0" of digitized value because the current resistance among the bit cells 55 is low. Otherwise, the bit cell represents "1" as the current resistance is high. Therefore, when an electrical current is applied to one of word lines 61, different voltages are detected at the bit lines 63 according to the magnetized state of the bit cells 55. As a result, the stored data is retrieved. Electric current is applied to a selected word line 61 and a selected bit line 63 to write data and the second ferromagnetic layer 73 is magnetized in the reversed direction to the first ferromagnetic layer 71. The MRAM consists of magnetic materials for memory cells and semiconductor materials for driving the magnetic cells. In the MRAM, increasing the density of the magnetic cells is one of the important problems. The magnetic cells of the MRAM are isolated from one another. However, there are the same problems of the exchange interaction and the magneto-static interaction, when the magnetic cells are closely arrayed to increase the area density.

Please replace the first paragraph beginning on page 4 with the following amended paragraph:

The inventors filed a patent with KIPO (Korea Intellectual Property Organization) in July 24, 1998 and the application number 10-1998-029830 was assigned. In this application, method of forming a meta-stable magnetic material and a magnetic material thereby is mentioned. It is shown that a thin magnetic film having advanced magnetic properties is obtained by depositing multi layers of rare earth ~~rare~~ materials and transition elements and by mixing the rare earth ~~rare~~ materials and transition elements using an ion beam including inert gas in a magnetic field. As a result, the magnetic momentum and coerciveness were improved up to 50% after the ion beam mixing. Studies about the magnetism of the magnetic thin film which is treated with the ion beam are done continuously and it is found out that an easy-axis is formed in a thin magnetic film after the ion beam mixing. This patent further exploits the magnetic film having an easy axis and multiple easy axis.

Please replace the last paragraph beginning on page 5 with the following amended paragraph:

The Figs.3a to 3c show a method of forming a meta-stable magnetic material having dual easy axis by an ion beam mixing. In this preferred embodiment, the magnetic material has at least one of rare earth ~~rare~~ materials such as Pt, Pd, Au and Tb and at least one of transition metals such as Co, Fe, and Ni. The ion beam for mixing the earth rare materials and the transition metals includes a selected one

among inert gases such as He, Ne, Ar, Xe and Kr.

Please replace the paragraph beginning on page 6, line 3, with the following amended paragraph:

Referring to Fig 3a, eight Pt layers 111a and eight Co layers 111b are deposited alternatively on a substrate 101 made of glass to form a CoPt multi layer 111 in a vacuum chamber (not shown in figure) with $8X10^{-7}$ torr. The thickness of each Pt layer 111a is 35Å and that of each Co layer 111b is 45Å so the thickness of the CoPt multi layer 111 is 640Å. Here, an easy axis in the Co/Pt multi layer 111 of which direction is formed along to 170°-350° in the polar coordinate system is detected. As shown in Fig 4, the white circles represent the direction of the easy axis of the CoPt multi layer 111. ~~A first area 211a and a second area 211b are defined in the CoPt multi layer 111.~~

Please replace the paragraph beginning on page 6, line 10, with the following amended paragraph:

Referring to Fig 3b, <u>a first area 211a and a second area 211b are defined in the CoPt multi layer 111.</u> ~~a second~~ <u>Second</u> area 211b is covered with a first mask 113a such as a stencil mask or a photo resist mask. Using an ion beam generator (not shown), an Ar^+ ion beam 115 is injected into the first area 211a of the CoPt multi layer 111 where the energy of the ion beam 115 is about 80keV. Then the

Co/Pt multi layer 111 is mixed to form a first meta-stable metal layer 121a having CoPt alloy. The first area 211a has a first easy axis having the direction of 200°-20° in the polar coordinate system. The asterisks, in the Fig 4, represent the direction of the first easy axis of the CoPt alloy in the first area 211a.

Please replace the paragraph beginning on page 7, line 8, with the following amended paragraph:

Referring to Fig. 5b, a first area 211a and a second area 211b are defined at the magnetic layer 131. The second area 211[[a]] <u>b</u> is covered with a first mask 113a such as a stencil mask or a photo resist mask. An Ar^+ ion beam 115 is injected into the first area 211a of the magnetic layer 131 using an ion beam generator (not shown) where the energy of the ion beam 115 is about 80keV. Then a first magnetic layer 131a is formed in the first area 211a with a first easy axis having the direction from about 90° to 270° in the polar coordinate system. As shown in Fig 6, the asterisks represent the direction of the first easy axis of the FePt magnetic layer 131a in the first area 211a.